Rješenja zadataka 8.3

Zadatak 1. Odredi kut između pravaca:

1) $3x+4y-25=0$, $4x+3y-25=0$;
2) $5x-y-8=0$, $3x+2y+2=0$;
3) $2x-3y+11=0$, $3x-y+5=0$.

Rješenje.

1) $3x+4y-25=0$
$4x+3y-25=0$
$4y=-3x+25$
$3y=-4x+25$
$y=-\frac{3}{4}x+\frac{25}{4}$
$y=-\frac{4}{3}x+\frac{25}{3}$

$$\operatorname{tg}\varphi=\left|\frac{k_2-k_1}{1+k_1k_2}\right|=\left|\frac{-\frac{4}{3}+\frac{3}{4}}{1+\frac{3}{4}\cdot\frac{4}{3}}\right|=\left|\frac{\frac{-16+9}{12}}{2}\right|=\left|\frac{\frac{-7}{12}}{2}\right|=\left|\frac{-7}{24}\right|=\frac{7}{24}\implies\varphi\approx 16^\circ 15'$$

2) $5x-y-8=0$
$3x+2y+2=0$
$y=5x-8$
$2y=-3x-2$
$y=5x-8$
$y=-\frac{3}{2}x-1$

$$\operatorname{tg}\varphi=\left|\frac{k_2-k_1}{1+k_1k_2}\right|=\left|\frac{-\frac{3}{2}-5}{1-5\cdot\frac{3}{2}}\right|=\left|\frac{\frac{-3-10}{2}}{-\frac{13}{2}}\right|=1\implies\varphi=45^\circ$$

3) $2x-3y+11=0$
$3x-y+5=0$
$3y=2x+11$
$y=3x+5$
$y=\frac{2}{3}x+\frac{11}{3}$
$y=3x+5$

$$\operatorname{tg}\varphi=\left|\frac{k_2-k_1}{1+k_1k_2}\right|=\left|\frac{3-\frac{2}{3}}{1+\frac{2}{3}\cdot 3}\right|=\left|\frac{\frac{7}{3}}{3}\right|=\frac{7}{9}\implies\varphi=37^\circ 52'$$